

NO-A176 689

MONDESTRUCTIVE INSPECTION CAREER LADDER AFSC 427X2(U)
AIR FORCE OCCUPATIONAL MEASUREMENT CENTER RANDOLPH AFB
TX JAN 87

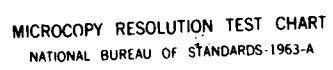
14

UNCLASSIFIED

F/G 5/9

NL

[illegible]



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



UNITED STATES AIR FORCE

AD-A176 689

OCCUPATIONAL SURVEY REPORT



NONDESTRUCTIVE INSPECTION CAREER LADDER

AFSC 427X2

AFPT 90-427-735

JANUARY 1987

DTIC
ELECTE
FEB 12 1987
S D

DTIC FILE COPY

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

87 2 11 019

DISTRIBUTION FOR
AFSC 427X2 OSR AND SUPPORTING DOCUMENTS

	<u>OSR</u>	<u>ANL EXT</u>	<u>TNG EXT</u>	<u>JOB INV</u>
AFHRL/MODS	2	1m	1m	
AFHRL/ID	1	1m	1m/1h	
AFLMC/LGM	1		1	
AFMPC/DPMRTC	2			
ARMY OCCUPATIONAL SURVEY BRANCH	1			
CCAF/AYX	1			
DEFENSE TECHNICAL INFORMATION CENTER	2			
HQ AAC/DPAT	3		3	
HQ AFISC/DAP	2			
HQ AFSC/MPAT	3		3	
HQ ATC/DPAE	1		1	
HQ ATC/TTQL	2		1	
HQ MAC/DPAT	3		3	
HQ MAC/TTGT	1		1	
HQ PACAF/TTGT	1		1	
HQ PACAF/DPAT	3		3	
HQ SAC/DPAT	3		3	
HQ SAC/TTGT	1		1	
HQ TAC/DPATJ	3		3	
HQ TAC/TTGT	1		1	
HQ USAF/LEYM	1		1	
HQ USAF/MPPT	1		1	
HQ USAFE/DPAT	3		3	
HQ USAFE/TTGT	1		1	
HQ USMC (CODE TPI)	1			
NODAC	1			
3330 TCHTW/TTGX (CHANUTE AFB IL)	5	2	8	2
3330 TCHTW/TTS (CHANUTE AFB IL)	1		1	
DET 2, USAFOMC (CHANUTE AFB IL)	1		1	1
SA-ALC/MMEI (KELLY AFB TX)	3		3	1
USAFOMC/OMYXL	10	2m	5	10
388 TFW/MAT (HILL AFB UT)	2		2	
3507 ACS/DPKI	1			

m = microfiche only
h = hard copy only

TABLE OF CONTENTS

	<u>PAGE NUMBERS</u>
PREFACE	111
SUMMARY OF RESULTS.	iv
INTRODUCTION.	1
Background	1
SURVEY METHODOLOGY.	1
Inventory Development.	1
Survey Administration.	2
Survey Sample.	3
Task Factor Administration	3
SPECIALTY JOBS.	6
Overview of Specialty Jobs	7
Group Descriptions	7
Comparisons of Specialty Jobs.	12
Comparison of Current Survey to Previous Survey.	13
ANALYSIS OF DAFSC GROUPS.	13
Skill Level Descriptions	15
Summary.	15
ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS	19
TRAINING ANALYSIS	19
First-Enlistment Personnel	19
Training Emphasis and Task Difficulty Data	21
Specialty Training Standard (STS).	21
Plan of Instruction (POI).	30
JOB SATISFACTION ANALYSIS	33
MAJCOM COMPARISONS.	37
IMPLICATIONS.	37
APPENDIX A.	38

PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Nondestructive Inspection career ladder (AFSC 427X2). The project was directed by USAF Program Technical Training, Volume Two, dated February 1984. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products upon which this report is based are available for use by operations and training officials.

The survey instrument was developed by CMSgt Thomas DeAngelis and 2d Lt William Carney, Inventory Development Specialists, with computer programming support furnished by Ms Olga Velez. Administrative support was furnished by Ms Raquel A. Soliz. Mr Robert L. Alton, Occupational Analyst, analyzed the data and wrote the final report. This report has been reviewed and approved by Lt Col Charles D. Gorman, Chief, USAF Airman Analysis Branch, Occupational Analysis Division, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Division (OMY), Randolph AFB, Texas 78150-5000.

RONALD C. BAKER, Colonel, USAF
Commander
USAF Occupational Measurement
Center

JOSEPH S. TARTELL
Chief, Occupational Analysis Division
USAF Occupational Measurement
Center

SUMMARY OF RESULTS

1. Survey Coverage: The Nondestructive Inspection career ladder was surveyed to obtain current data for use in training management decisions. Survey results are based on responses from 690 members (72 percent of all assigned 3-, 5-, and 7-skill level 427X2 career ladder personnel and 85 percent of all 427X2 personnel eligible for survey), with all major using commands well represented in the survey sample.
2. Specialty Jobs: Six separate jobs were identified in the analysis. Four of these jobs directly involved performance of the range of nondestructive inspection procedures and techniques. The remaining two jobs were oriented toward supervisory, managerial, and training activities.
3. Career Ladder Progression: The 3- and 5-skill level jobs were highly technical, with very little responsibility for supervision or management. Seven-skill level members, although reporting a responsibility for and performing supervision, were still performing a job that was very technically oriented.
4. AFR 39-1 Specialty Descriptions: All descriptions accurately depict the nature of the respective jobs.
5. Training Analysis: The Specialty Training Standard (STS) is well supported by survey data, with only a few elements requiring review of 3-skill level proficiency coding. All blocks and objectives of the Plan of Instruction (POI) are well supported by survey data. Some tasks not matched to these training documents require evaluation for possible inclusion in the training program.
6. Implications: The training program is well grounded and appears to be operating quite effectively. The STS requires only minor adjustments and tasks not referenced to the STS or POI will require review for possible inclusion in the documents in future updates or rewrites.



Accession For	
NTIS CRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

OCCUPATIONAL SURVEY REPORT
NONDESTRUCTIVE INSPECTION CAREER LADDER
(AFSC 427X2)

INTRODUCTION

→ This is a report of an occupational survey of the Nondestructive Inspection career ladder completed by the Occupational Analysis Division, USAF Occupational Measurement Center. This survey was requested by the 3330th Technical Training Wing, Chanute Technical Training Center, Chanute AFB IL, to obtain current task and equipment data for use in evaluation of current training programs. The last survey results for the career ladder were published in September 1979.

Background

The Nondestructive Inspection career ladder was established in September 1966 and has had various AFSC designations over the years. The current AFSC, 427X2, was assigned in April 1977. The career ladder was included under CEM Code 42700 when the Fabrication Manager CEM level was established in October 1978.

As described in AFR 39-1 Specialty Descriptions, personnel in this career ladder are responsible for using various nondestructive inspection techniques to detect discontinuities and flaws in aircraft, missile, and aerospace ground support equipment component parts and pressurized systems and fluid systems. Primary entry into the career ladder is from Basic Military Training School (BMTS) through a Category A 10-week and 3-day formal training course conducted at Chanute AFB, IL. Entry into the career ladder currently requires an Armed Services Vocational Aptitude Battery (ASVAB) General score of 43.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-427-735, dated September 1985. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, tasks from the previous survey instrument, and data from the last Occupational Survey Report (OSR). The preliminary task list was refined and validated through personal interviews with 26 subject-matter experts selected to cover a variety of major commands (MAJCOM) and weapons systems at the following locations:

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

<u>BASE</u>	<u>MAJCOM</u>	<u>REASON FOR VISIT</u>
Chanute AFB IL	ATC	Location of ABR technical training course
Holloman AFB NM	TAC	Personnel are assigned to a component repair squadron (CRS) supporting F-15 and T-38B aircraft
Altus AFB OK	MAC SAC	Personnel support C-5, C-141, and SAC KC-135 aircraft flying activities
Cannon AFB NM	TAC	NDI technicians support F-111 aircraft operations
Carswell AFB TX	SAC	A SAC base with B-52 and KC-135 aircraft
Kelly AFB TX	ANG AFRES	NDI laboratory personnel have experience in support of both F-4 and C-130 aircraft

The resulting job inventory contained a comprehensive listing of 322 tasks grouped under 16 duty headings. The inventory also included a background section asking for information such as inspection techniques used, types of vehicles operated, and specific types of equipment used with the various inspection procedures.

Survey Administration

From November 1985 through April 1986, Consolidated Base Personnel Offices (CBPO) in operational units worldwide administered the inventory to job incumbents holding DAFSCs 42732, 42752, or 42772. These job incumbents were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in his or her current job. After checking all tasks performed, each member then rated each of these tasks on a 9-point scale showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount time spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative

percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Survey Sample

Personnel were selected to participate in this survey so as to ensure an accurate representation across major commands (MAJCOM) and paygrade groups. All eligible 427X2 personnel were mailed survey booklets. Table 1 reflects the percentage distribution, by MAJCOM, of assigned personnel in the career ladder as of September 1985. Also listed in this table is the percent distribution, by MAJCOM, of respondents in the final survey sample. The 690 respondents included in the final sample represent 85 percent of the total 810 personnel eligible for the survey. Table 2 reflects the paygrade group distribution of the final sample. As reflected in these tables, the survey sample is an excellent representation of the career ladder population.

Task Factor Administration

In addition to completing the job inventory, selected senior 42772 personnel (generally E-6 or E-7 technicians) also completed a second booklet for either training emphasis (TE) or task difficulty (TD). The TE and TD booklets were processed separately from the job inventories. The information is used in a number of different analyses discussed in more detail within the report.

Task Difficulty (TD). Each individual completing a TD booklet was asked to rate all of the tasks on a 9-point scale (from extremely low to extremely high) as to the relative difficulty of each task in the inventory. Difficulty is defined as the length of time required by the average member to learn to do the task. Task difficulty data were independently collected from 45 experienced 7-skill level personnel stationed worldwide. If raters were in complete agreement on task difficulty ratings for the specialty, the interrater reliability would be 1.0. The interrater reliability (as assessed through components of variance of standard group means) of .96 for these 427X2 raters suggests a very high agreement among raters. Ratings were adjusted so tasks of average difficulty have ratings of 5.00. The resulting data are essentially a rank ordering of tasks indicating the degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing a TD rating for each item, it is possible to compute a Job Difficulty Index (JDI) for the jobs identified in the career ladder structure analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. The number of tasks performed and the average difficulty per unit time spent (ADPUTS) are used as variables in an equation that calculates the JDI. The index ranges from 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so the average JDI equals 13.00. Thus, the more time a group spends on difficult tasks, and the more tasks they perform, the higher the job difficulty index.

TABLE 1
COMMAND REPRESENTATION OF 427X2 SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
TAC	32	32
MAC	16	18
SAC	15	15
ATC	15	12
USAFE	12	12
PACAF	6	6
AFSC	3	2
AAC	1	2
OTHER	<u>***</u>	<u>1</u>
TOTAL	100	100

Total Assigned* - 961

Total Eligible for Survey** - 810

Total in Sample - 690

Percent of Assigned in Sample - 72%

Percent of Eligible in Sample - 85%

* Manning figures as of September 1985

** Excludes personnel in PCS, student, or hospital status, or with less than 6 weeks on the job

*** Less than .5 percent

TABLE 2
PAYGRADE DISTRIBUTION OF 427X2 SURVEY SAMPLE

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED*</u>	<u>PERCENT OF SAMPLE</u>
AIRMAN	30	28
E-4	30	29
E-5	23	26
E-6	11	11
E-7	6	6

* Manning figures as of September 1985

Training Emphasis (TE). Individuals completing TE booklets were asked to rate tasks on a 10-point scale (from no training required to extremely heavy training required). Training emphasis is a rating of which tasks require structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 64 experienced 7-skill level personnel stationed worldwide. As with task difficulty ratings, if all raters were in complete accord on which tasks are important for first-enlistment training, the interrater reliability would be 1.0. The interrater reliability (as assessed through components of variance of standard group means) for these raters was very high (.98), indicating there was excellent agreement among raters as to which tasks required some form of structured training and which did not. In this specialty, tasks rated high in TE have ratings of 6.09 and above, with an average rating of 4.01. As was discussed in the Task Difficulty (TD) section above, TE rating data may also be used to rank order tasks indicating those tasks which senior NCOs in the field consider the most important for the first-term airman to know.

When used in conjunction with the primary criterion of percent members performing, TD and TE ratings can provide insight into first-term personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting AFS entry-level jobs.

SPECIALTY JOBS (Career Ladder Structure)

A USAF occupational analysis begins with an examination of the career ladder structure. The structure of jobs within the Nondestructive Inspection (NDI) career ladder was examined on the basis of similarity of tasks performed and the percent of time spent ratings provided by job incumbents, independent of other specialty background factors.

For the purpose of organizing individual jobs into similar units of work, an automated job clustering program is used. This hierarchical grouping program is a basic part of the Comprehensive Occupational Data Analysis Program (CODAP) system for job analysis. Each individual job description (all the tasks performed by that individual and the relative amount of time spent on those tasks) in the sample is compared to every other job description in terms of tasks performed and the relative amount of time spent on each task in the job inventory. The automated system is designed to locate the two job descriptions with the most similar tasks and percent time ratings and combine them to form a composite job description. In successive stages, new members are added to initial groups or new groups are formed based on the similarity of tasks performed and similar time ratings in the individual job descriptions. The basic identifying group used in the hierarchical job structuring process is the Job Type.

A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing them. When there are variations

in the combinations of tasks and time by sample respondents, some number of different jobs are identified. The resulting job structure information (these varying jobs within the career ladder) can be used to evaluate the accuracy of career ladder documents (AFR 39-1 Specialty Descriptions and Specialty Training Standards) and to gain a better understanding of current utilization patterns.

Overview of Specialty Jobs

Responses from the AFSC 427X2 personnel in the survey sample indicate a career ladder where most people perform a rather large number of common tasks. Even so, based on some variations in combinations of tasks performed, structure analysis identified six jobs within the survey sample. Based on task similarity and relative time spent, the division of the jobs performed by AFSC 427X2 personnel is illustrated in Figure 1, and a listing of those jobs is provided below. The group (GRP or SPC) number shown beside each title is a reference to computer printed information; the number of personnel in each group (N) is also shown.

- I. GENERAL INSPECTION PERSONNEL (GRP052, N=471)
- II. SUPERVISORY NONDESTRUCTIVE INSPECTION (NDI) TECHNICIANS (GRP051, N=92)
- III. APPRENTICE INSPECTION PERSONNEL (GRP046, N=29)
- IV. JOINT OIL ANALYSIS PROGRAM (JOAP) PERSONNEL (GRP037, N=18)
- V. TRAINING PERSONNEL (SPC050, N=17)
- VI. SHOP/LABORATORY NCOICs (GRP035, N=23)

The respondents forming these groups account for 94 percent of the survey sample. The remaining 6 percent were performing tasks or series of tasks which did not group with any of the defined jobs. Job titles given by respondents which were representative of these personnel included Maintenance Manpower Manager, Resource Advisor, Maintenance Deployment Superintendent, and Staff Technical Advisor.

Group Descriptions

The following paragraphs contain brief descriptions of the jobs identified through the career ladder structure analysis. Selected background data are provided for these groups in Table 3. Representative tasks for each group are contained in Appendix A.

I. GENERAL INSPECTION PERSONNEL (GRP052). The 471 airmen forming this group (68 percent of the total sample) represent the essence of the job performed by nondestructive inspection personnel. Group members perform a rather broad job which covers all of the various nondestructive inspection techniques and procedures (liquid penetrant, magnetic particle, radiographic, ultrasonic, eddy current, optical, spectrometric oil analysis, and bond

FIGURE 1

427X2 CAREER LADDER STRUCTURE
(N=690)

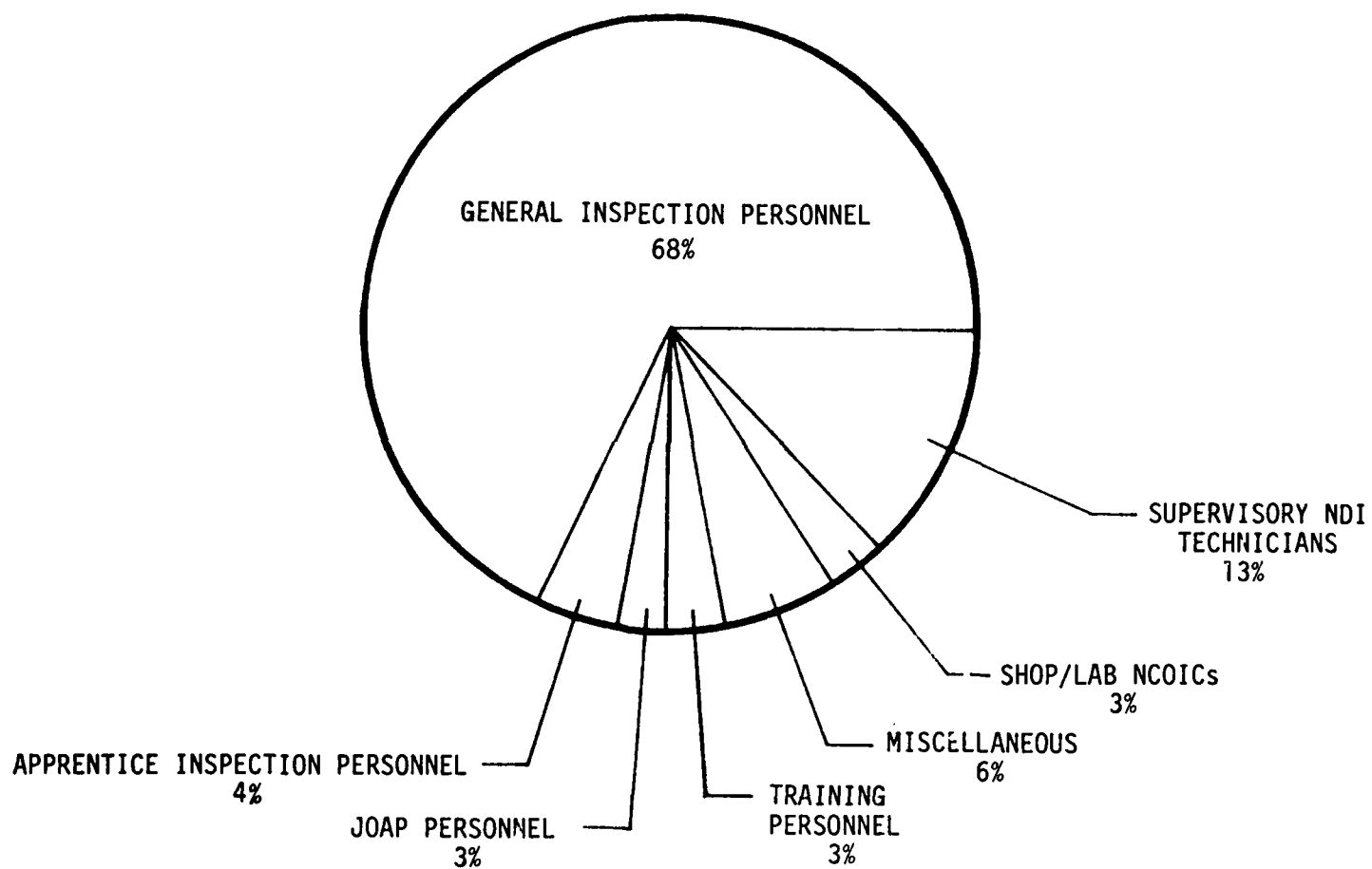


TABLE 3

SELECTED BACKGROUND DATA FOR SPECIALTY JOB GROUPS

	GENERAL INSPECTION PERSONNEL (GRP052)	SUPERVISORY NDI TECHNICIANS (GRP051)	APPRENTICE INSPECTION PERSONNEL (GRP046)	JOAP PERSONNEL (GRP037)	TRAINING PERSONNEL (SPC050)	SHOP/LAB NCOICs (GRP035)
NUMBER IN GROUP:	471	92	29	18	17	23
PERCENT OF SAMPLE:	68%	13%	4%	3%	3%	3%
PERCENT IN CONUS:	75%	65%	90%	78%	88%	74%
DAFSC DISTRIBUTION:						
42732	15%	0%	21%	22%	6%	0%
42752	70%	28%	72%	78%	71%	0%
42772	15%	72%	7%	0%	23%	100%
AVERAGE GRADE:						
AVERAGE MONTHS IN CAREER FIELD:	E-4	E-6	E-3, E-4	E-3	E-5	E-6
AVERAGE MONTHS IN SERVICE:	50	116	35	25	70	142
PERCENT IN FIRST-ENLISTMENT	60	153	44	28	78	189
	53%	1%	65%	89%	24%	0%
PERCENT SUPERVISING:						
AVG NUMBER OF TASKS PERFORMED:	32%	90%	21%	17%	0%	100%
JOB DIFFICULTY INDEX (JDI):	147	216	83	74	69	96
(AVERAGE JDI = 13.00)	13.23	18.09	6.64	5.26	9.04	13.92

testing). The job is also highly technical, with 94 percent of their relative time devoted to performance of tasks pertaining to the various inspection procedures or the administrative functions associated with the inspection process. The scope of the work performed by group members is illustrated by the fact they responded to tasks ranging in difficulty from mowing grass (TD rating of 2.73) to developing ultrasonic flaw detection techniques (TD rating of 7.20 - highest of any task in the inventory). Typical of the average 147 tasks performed are:

- interpreting penetrant indications
- identifying magnetic particle indications
- recording NDI data on AFTO Forms 349 (Maintenance Data Collection Record)
- operating eddy current equipment for flaw detection
- interpreting radiographic indications
- operating or using optical aids

With an average grade of E-4 and an average of over 4 years in the career field, this group is dominated by 5-skill level personnel (70 percent) and contains representatives from all of the major commands using 427X2 resources.

II. SUPERVISORY NDI TECHNICIANS (GRP051). Ninety percent of this group reported that they were supervising other personnel, identifying themselves with titles such as NCOICs, Shift Supervisors, or Assistant NCOICs. Averaging over 9 years in the career field, 28 percent of the 92 members (13 percent of the total sample) hold the 5-skill level, with 72 percent reporting a 7-skill level AFSC. While the job is clearly supervisory in nature, 57 percent of their relative job time is spent on technical tasks pertaining to materials inspections utilizing the various NDI techniques and procedures. Performing many of the same technical tasks as the group discussed above (GENERAL INSPECTION PERSONNEL), these NCOs are differentiated by their performance of basic supervisory and managerial tasks such as:

- supervising Nondestructive Inspection Specialists (AFSC 42752)
- interpreting policies, directives, or procedures for subordinates
- preparing AF Forms 601 (Equipment Action Request)
- writing APRs
- conducting OJT

Performing an average of 216 tasks (highest of all the career ladder structure groups), this group's job is relatively difficult, with the highest Job Difficulty Index (18.09) of all the groups identified.

III. APPRENTICE INSPECTION PERSONNEL (GRPO46). Representing 4 percent of the survey sample (29 members), these somewhat less experienced airmen (an average of 35 months in the career field) perform most of the same NDI procedures described in the discussion of the GENERAL INSPECTION PERSONNEL group. The primary difference between the groups is the limited amount of time spent by these airmen on tasks pertaining to the Joint Oil Analysis Program (JOAP) and bond testing. Additionally, review of the tasks performed in relation to the more common NDI techniques (i.e. magnetic particle inspections, liquid penetrant inspections, or radiographic inspections) reflects that these personnel responded in lesser numbers to the more difficult procedural tasks relating to performing process control or technique development. This group performs a somewhat limited job (an average of 83 tasks -- next to the lowest of the technical job groups identified), with only 40 tasks occupying over 50 percent of their job time. The limited number of tasks performed and the relatively low task difficulty ratings for most of the predominant tasks result in next to the lowest JDI (6.64) of all the jobs in the career ladder structure.

IV. JOAP PERSONNEL (GRPO37). The 18 predominantly first-term airmen (89 percent) forming this group perform tasks involving all the NDI procedures. They are, however, distinguished from the other groups identified in the career ladder structure analysis because of the higher proportion of their relative job time (32 percent) devoted to tasks pertaining to the oil analysis process and the associated administrative and equipment maintenance procedures. Typical time consuming oil analysis tasks include:

- recording wear metal concentrations on DD Forms 2026 (Oil Analysis Request)
- operating atomic emission spectrometers
- performing JOAP trend analysis
- analyzing correlation samples
- recording wear metal concentrations on DD Forms 2027 (Oil Analysis Record)

With an average grade of E-3, 25 months average time in the career field, and only 28 months average time in the service, personnel forming this group are the least experienced of all identified groups in the survey sample.

V. TRAINING PERSONNEL (SPC050). The vast majority of the 17 personnel forming this group are Instructors assigned to the technical training center. With almost 6 years in the career field (average grade is E-5), group members responded to a series of technically oriented tasks performed while demonstrating appropriate techniques or procedures, as well as those normally performed

in an academic classroom or laboratory environment. Examples of tasks which define the group include:

- conducting resident course classroom training
- administering or scoring tests
- evaluating progress of resident course students
- demonstrating how to locate technical information
- writing test questions

VI. SHOP/LAB NCOICs (GRP035). Spending 65 percent of their relative job time performing tasks pertaining to general supervisory, managerial, and training duties, each of these 23 NCOs report supervisory responsibilities (an average of 11 personnel are supervised). An additional 17 percent of their job time is committed to tasks involving general administrative functions. Highly experienced (all group members report holding the 7-skill level), these NCOs reflect an average of almost 12 years in the career field and almost 16 years in the service. With limited technical task performance (which clearly distinguishes these personnel from the previously discussed SUPERVISORY NDI TECHNICIANS), typical supervisory and managerial-type tasks performed include:

- drafting budget or financial requirements
- completing personnel action requests
- planning layouts of facilities
- writing staff studies, surveys, or special reports
- conducting staff meetings
- writing APRs

Comparisons of Specialty Jobs

Six jobs were identified in the career ladder structure analysis, with one core job (GENERAL INSPECTION PERSONNEL) accounting for 68 percent of the total sample. Four of the jobs, although varying to some degree in the scope of the work, were generally similar and personnel performed many common technical tasks involving most of the NDI techniques and procedures. The remaining two jobs were oriented toward supervisory, managerial, and training activities. Aside from the previously noted higher concentration of time spent on oil analysis tasks by the JOAP PERSONNEL group, no noteworthy degree of specialization around specific inspection techniques or procedures was identified. The career ladder appears to be highly homogeneous, with the vast majority of personnel performing essentially the same job. Thus, the specialty job analysis and survey data tend to support the current career ladder structure.

Difficulty of career ladder jobs was compared using the Job Difficulty Index (JDI) described in the Task Factor Administration section of this report (average JDI=13.00). Review of Table 3 reveals that these JDIs reflect a range in difficulty for the various jobs. For example, the SUPERVISORY NDI

TECHNICIANS group, performing a mixture of supervisory and technical tasks, computes the highest JDI (18.09) of all the jobs identified. JOAP PERSONNEL, on the other hand, performing a job with a considerably lower average number of tasks, compute a JDI of only 5.26 (lowest of all the jobs in the career ladder sample).

Comparison of Current Survey to Previous Survey (Specialty Job Structure)

The results of the specialty job analysis were compared to those of Occupational Survey Report (OSR) AFPT 90-427-386, dated September 1979. Table 4 displays a comparison of the jobs identified in each of the surveys. After reviewing the tasks performed within the jobs identified in 1979, it was determined that most of those groups could be linked with similar task performances by 1986 sample groups. The appearance of differences (i.e., group titles) is a surface difference only and can be attributed to a more definitive task list or to the analytical approach utilized.

Aside from some minor variations (i.e., the identification of such groups as TRAINING PERSONNEL-1986 sample, and RADIOGRAPHIC INSPECTORS-1979 sample), the vast majority of the current sample could be matched to jobs identified in 1979, thus displaying a relatively stable career ladder over time.

In summary, this analysis supports the current career ladder structure. The career ladder is very homogeneous, with the majority of personnel performing essentially the same basic job.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what career ladder personnel are actually doing in the field.

A comparison of the duty and task performance between DAFSCs 42732 and 42752 indicated that, while there are some minor differences, by and large, the jobs they perform are essentially the same. Therefore, they will be discussed as a combined group in this report. Nine-skill level and CEM code personnel in the 427XX career field were not surveyed and will not be discussed.

The distribution of skill-level groups across the career ladder jobs is displayed in Table 5, while Table 6 offers another perspective by displaying the relative percent time spent on each duty across the skill-level groups. A typical pattern of progression is present, with personnel spending more of

TABLE 4

JOB SPECIALTY COMPARISONS BETWEEN CURRENT AND 1979 SURVEY

CURRENT SURVEY (N=690)	PERCENT OF SAMPLE	1979 SURVEY (N=661)	PERCENT OF SAMPLE
GENERAL INSPECTION PERSONNEL (N=471)	68	EXPERIENCED GENERAL INSPECTORS (N=302) NDI EQUIPMENT INSPECTORS (N=10) BASIC METHODS INSPECTORS (N=9)	46 2 1
SUPERVISORY NDI TECHNICIANS (N=92)	13	NCOICs, NDI LAB (N=107)	16
APPRENTICE INSPECTION PERSONNEL (N=29)	4	JUNIOR INSPECTORS	9
JOAP PERSONNEL (N=18)	3	JOAP INSPECTORS (N=21) JOAP LAB PERSONNEL (N=9)	3 1
TRAINING PERSONNEL (N=17)	3	NOT IDENTIFIED	-
SHOP/LAB NCOICs (N=23)	3	ADMINISTRATORS (N=16)	2
NOT IDENTIFIED*	-	BRANCH SUPERVISORS (N=71)	11
NOT IDENTIFIED	-	RADIOGRAPHIC INSPECTORS (N=7)	1

* 42799/00 Personnel were not surveyed in 1986

their relative time on duties involving supervisory, managerial, and administrative tasks (see Table 6, Duties A, B, C, D, and E) as they move upward to the 7-skill level. It is also obvious, though, that 7-skill level personnel are still very involved with technical task performance, as will be pointed out in the specific skill-level group discussions below.

Skill Level Descriptions

DAFSC 42732/42752. The 506 airmen in the 3- and 5-skill level group (representing 73 percent of the survey sample) performed an average of 136 tasks, with 69 tasks accounting for over 50 percent of their job time. Performing a highly technical job, 84 percent of their relative duty time is devoted to tasks covering the full range of NDI techniques and procedures, as well as maintenance and inspection of NDI equipment. Tasks pertaining to administrative functions accounted for an additional 9 percent of their duty time. As shown in Table 5, 88 percent of these incumbents are included in the four technically-oriented jobs. Table 7 displays selected representative time-consuming tasks performed by a majority of these airmen (see highlighted column in the upper half of the table) along with responses from 7-skill level airmen. With this arrangement, it is easy to see commonality and differences between the two groups. Tasks common to the 3- and 5-skill level airmen are also performed by large percentages of the 7-skill level airmen.

DAFSC 42772. Seven-skill level personnel, representing 27 percent of the survey sample, perform an average of 160 tasks, with 101 tasks accounting for over 50 percent of their relative job time. Even though 84 percent of the group report supervisory responsibilities, only 45 percent of their relative job time is spent on tasks in the usual supervisory, managerial, training, and administrative duties (see Table 6). This is further highlighted by the fact that only 12 percent of the 184 people forming this group are found in the SHOP/LAB NCOICs job discussed earlier in the SPECIALTY JOBS section (the one job that was predominantly supervisory in nature). A review of Table 5 shows that 75 percent of the 7-skill level personnel are found in the jobs that were identified as technician or technician-supervisory oriented (GENERAL INSPECTION PERSONNEL and SUPERVISORY NDI TECHNICIANS). While the display of tasks in Table 7 clearly shows these senior personnel are responsible for supervision in the shops (see highlighted supervisory-type tasks in the bottom half of the table), it also reflects the range and scope of the job, in that they are also technicians performing a wide variety of day-to-day technical NDI tasks.

Summary

Career ladder progression is evident, with personnel at the 3- and 5-skill levels spending the vast majority of their job time performing technical tasks. At the 7-skill level, although members still perform a substantial amount of common day-to-day technical NDI work, a shift toward supervisory functions is quite clear.

TABLE 5
DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS CAREER LADDER JOBS

<u>CAREER LADDER JOBS</u>	<u>DAFSC 42732/52 (N=506)</u>		<u>DAFSC 42772 (N=184)</u>	
	<u>NUMBER</u>	<u>PERCENT</u>	<u>NUMBER</u>	<u>PERCENT</u>
I. GENERAL INSPECTION PERSONNEL (N=471)	400	79%	71	39%
II. SUPERVISORY NDI TECHNICIANS (N=92)	26	5%	66	36%
III. APPRENTICE INSPECTION PERSONNEL (N=29)	27	5%	2	1%
IV. JOAP PERSONNEL (N=18)	18	4%	0	0%
V. TRAINING PERSONNEL (N=17)	13	3%	4	2%
VI. SHOP/LAB NCOICs (N=23)	0	0%	23	12%
OTHER (N=40)	22	4%	18	10%

TABLE 6
AVERAGE PERCENT TIME SPENT
PERFORMING DUTIES BY DAFSC GROUPS

DUTIES	DAFSC 42732/42752 (N=506)	DAFSC 42772 (N=184)
A ORGANIZING AND PLANNING	1	6
B DIRECTING AND IMPLEMENTING	3	11
C INSPECTING AND EVALUATING	1	7
D TRAINING	2	7
E PERFORMING NONDESTRUCTIVE INSPECTION (NDI) ADMINISTRATIVE FUNCTIONS	9	14
F PERFORMING PREINSPECTION OR GENERAL NONDESTRUCTIVE INSPECTION (NDI) FUNCTIONS	9	6
G PERFORMING BOND TESTING	2	1
H PERFORMING LIQUID PENETRANT INSPEC- TIONS	14	9
I PERFORMING RADIOGRAPHIC INSPECTIONS	12	8
J PERFORMING ULTRASONIC INSPECTIONS	7	5
K PERFORMING MAGNETIC PARTICLE INSPEC- TIONS	12	7
L PERFORMING EDDY CURRENT INSPECTIONS	5	3
M PERFORMING MAINTENANCE AND INSPEC- TIONS OF NONDESTRUCTIVE INSPECTION EQUIPMENT	9	6
N PERFORMING JOINT OIL ANALYSIS PRO- GRAM (JOAP) FUNCTIONS	8	5
O PERFORMING QUALITY CONTROL OR PREUSE FUNCTIONS	3	3
P MAINTAINING FACILITIES AND EQUIPMENT	3	2

TABLE 7
DISPLAY OF REPRESENTATIVE TASKS FOR AND DIFFERENCES
BETWEEN DAFSC GROUPS
(PERCENT MEMBERS PERFORMING)

TASKS	42732/52 (N=506)	42772 (N=184)
H155 APPLY PENETRANT TO MATERIALS	95	76
H169 REMOVE PENETRANT FROM MATERIALS	94	76
H166 INTERPRET PENETRANT INDICATIONS	93	78
K235 OPERATE MAGNETIC PARTICLE EQUIPMENT	93	77
K234 INTERPRET MAGNETIC PARTICLE INDICATIONS	93	80
L251 INTERPRET EDDY CURRENT INDICATIONS ON A METER	89	80
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	89	79
L254 OPERATE EDDY CURRENT EQUIPMENT FOR FLAW DETECTION	88	75
I183 OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	86	73
F134 OPERATE OR USE OPTICAL AIDS	86	70
I197 SET UP RADIOGRAPHIC EXPOSURE EQUIPMENT	84	70
F140 SELECT GENERAL INSPECTION METHOD TO BE USED WHEN TECHNICAL DATA IS NOT AVAILABLE	82	80
I181 INTERPRET RADIOGRAPHIC INDICATIONS	82	78
E119 RECORD WEAR METAL CONCENTRATIONS ON DD FORM 2027 (OIL ANALYSIS RECORD)	74	64
J215 OPERATE ULTRASONIC FLAW DETECTION EQUIPMENT	73	64
I285 PERFORM AUTOMATIC RADIOGRAPHIC FILM PROCESSING	72	54
J210 INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	71	64
N290 PERFORM JOAP TREND ANALYSIS	70	62
N285 OPERATE ATOMIC EMISSION SPECTROMETERS	68	54
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	59	78
G151 SET UP BOND TESTING EQUIPMENT	42	37
G147 INTERPRET BOND TESTING INDICATIONS	41	38

B38 SUPERVISE NONDESTRUCTIVE INSPECTION SPECIALISTS (AFSC 42752)	29	85
C56 WRITE AIRMAN PERFORMANCE REPORTS (APR)	21	85
B21 COUNSEL PERSONNEL ON PERSONAL PROBLEMS	24	84
A9 PLAN OR SCHEDULE WORK ASSIGNMENTS	24	79
B32 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	21	76
C43 EVALUATE COMPLIANCE WITH WORK STANDARDS	19	69
D62 CONDUCT OJT	38	66
B27 DRAFT CORRESPONDENCE	12	64
E90 MAINTAIN D-04 DAILY DOCUMENT REGISTERS	21	64
A6 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	15	63
E89 MAINTAIN AF FORMS 2413 (SUPPLY CONTROL LOG)	26	61
C45 EVALUATE INSPECTION REPORTS OR PROCEDURES	10	58

ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

Survey data were compared to the AFR 39-1 Specialty Descriptions for Nondestructive Inspection Technicians and Specialists, both dated 1 January 1982.

The specialty description for the technician (AFSC 42772) accurately reflects both the technical and supervisory nature of the 7-skill level job. The 3-/5-skill level description also appears complete and accurately portrays the scope and technical nature of the job.

TRAINING ANALYSIS

Occupational survey data are one of the many sources of information which can be used to assist in the development of a training program relevant to the needs of personnel in their first enlistment. Factors which may be used in evaluating training include the overall description of the job being performed by first-enlistment personnel and their overall distribution across career ladder jobs; percentages of first-job (1-24 month TAFMS) or first-enlistment (1-48 months TAFMS) members performing specific tasks or using certain equipment or procedures; as well as training emphasis and task difficulty ratings (previously explained in the SURVEY METHODOLOGY section).

To assist specifically in the evaluation of the Specialty Training Standard (STS) and the Plan of Instruction (POI), technical school personnel from Chanute Technical Training Center matched job inventory tasks to appropriate sections and subsections of the STS and POI for course C3ABR42732 002. It was this matching upon which comparison to those documents was based. A complete computer listing displaying the percent members performing tasks, training emphasis and task difficulty ratings for each task, along with the STS and POI matchings, has been forwarded to the technical school for their use in further detailed reviews of training documents. A summary of this information is presented below.

First-Enlistment Personnel

In this study, there are 294 members in their first-enlistment (1-48 months TAFMS), representing nearly one-half (43 percent) of the total survey sample. The job performed by these personnel is highly technical in nature and covers the full range of nondestructive inspection technical activities. As displayed in Table 8, approximately 97 percent of their duty time is devoted to technical and administrative task performance. Additionally, some of their job time is spent in each of the various technical functions of the career ladder, suggesting that AFSC 427X2 first-enlistment personnel are able to gain experience in the full range of tasks relating to the specialty. No substantial degree of specialization around a particular inspection technique or procedure was identified. Distribution of these personnel across

TABLE 8
RELATIVE TIME SPENT ON DUTIES BY
FIRST-ENLISTMENT PERSONNEL

DUTIES	PERCENT TIME SPENT
A ORGANIZING AND PLANNING	*
B DIRECTING AND IMPLEMENTING	1
C INSPECTING AND EVALUATING	*
D TRAINING	1
E PERFORMING NONDESTRUCTIVE INSPECTION (NDI) ADMINISTRATIVE FUNCTIONS	8
F PERFORMING PREINSPECTION OR GENERAL NONDESTRUCTIVE INSPEC- TION (NDI) FUNCTIONS	10
G PERFORMING BOND TESTING FUNCTIONS	1
H PERFORMING LIQUID PENETRANT INSPECTIONS	16
I PERFORMING RADIOGRAPHIC INSPECTIONS	13
J PERFORMING ULTRASONIC INSPECTIONS	7
K PERFORMING MAGNETIC PARTICLE INSPECTIONS	13
L PERFORMING EDDY CURRENT INSPECTIONS	6
M PERFORMING MAINTENANCE AND INSPECTIONS OF NONDESTRUCTIVE INSPECTION EQUIPMENT	9
N PERFORMING JOINT OIL ANALYSIS PROGRAM (JOAP) FUNCTIONS	8
O PERFORMING QUALITY CONTROL OR PREUSE FUNCTIONS	3
P MAINTAINING FACILITIES AND EQUIPMENT	4

* Denotes less than .5 percent

career ladder jobs is displayed in Figure 2, which shows the vast majority of first-enlistment personnel are involved in day-to-day NDI technical activities. Table 9 displays just some of the average 128 tasks performed by the group, and is intended to represent a range of tasks across the various types of NDI processes and procedures.

One of the objectives of this survey project was to gather data for the technical training center pertaining to types of equipment currently used in the field. Accordingly, Tables 10, 11, 12, 13, and 14 present percentages of first-term airmen using or operating vehicles and the various types of equipment used to perform nondestructive inspections. This type of information is useful for both the technical school and MAJCOM training personnel to assist them in focusing limited training time or other resources on the most utilized items.

Training Emphasis and Task Difficulty Data

Training emphasis (TE) and task difficulty (TD) data are secondary factors that can assist technical school personnel in deciding what tasks should be emphasized in entry-level training. These ratings, based on the judgments of senior career ladder NCOs working at operational units in the field, are collected to provide training personnel with a rank-ordering of those tasks considered important for first-term airman training (TE), along with a measure of the difficulty of those tasks (TD). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can then be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors, accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-term personnel, but this decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks. Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. (For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the SURVEY METHODOLOGY section of this report).

Specialty Training Standard (STS)

A comprehensive review of STS 427X2, dated September 1980, compared STS items to survey data. STS paragraphs containing general knowledge information or subject-matter knowledge requirements were not evaluated. Overall, the STS provides comprehensive coverage of the work performed by personnel in the field, with survey data supporting each of the significant paragraphs or subparagraphs.

Some few elements of the STS do require review of 3-skill level proficiency coding by training personnel and subject-matter experts. Table 15 displays data pertaining to these elements. Paragraph 6d reflects only a

FIGURE 2

DISTRIBUTION OF FIRST-ENLISTMENT PERSONNEL
ACROSS SPECIALTY JOBS
(N=294)

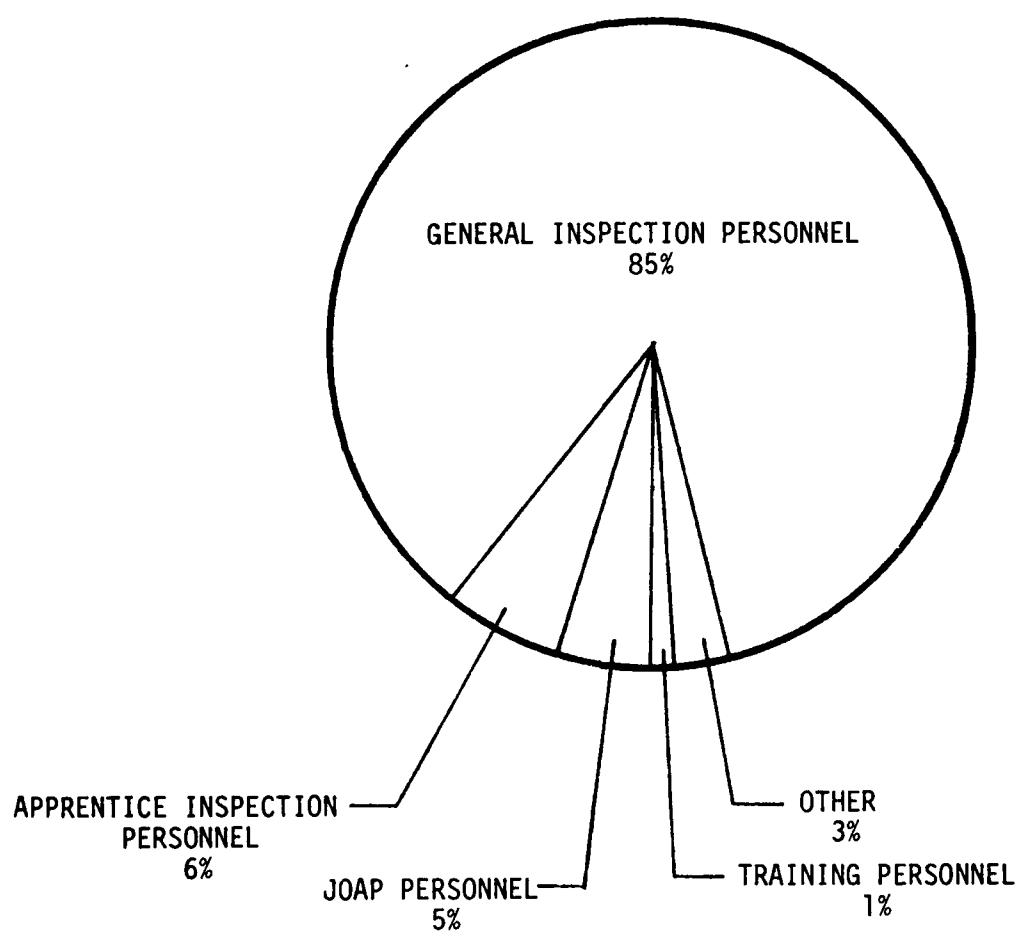


TABLE 9
REPRESENTATIVE TASKS PERFORMED
BY 427X2 FIRST-ENLISTMENT PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=294)
H155 APPLY PENETRANT TO MATERIALS	97
H163 IDENTIFY PENETRANT INDICATIONS	96
H169 REMOVE PENETRANT FROM MATERIALS	96
K233 IDENTIFY MAGNETIC PARTICLE INDICATIONS	96
K226 APPLY MAGNETIZING CURRENT TO MATERIALS	96
H166 INTERPRET PENETRANT INDICATIONS	95
K234 INTERPRET MAGNETIC PARTICLE INDICATIONS	95
L250 IDENTIFY EDDY CURRENT INDICATIONS	93
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	90
L254 OPERATE EDDY CURRENT EQUIPMENT FOR FLAW DETECTION	90
F141 SELECT SPECIFIC INSPECTION METHOD TO BE USED BY REFERENCE TO TECHNICAL DATA	89
F134 OPERATE OR USE OPTICAL AIDS	88
I183 OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	86
I180 IDENTIFY RADIOGRAPHIC INDICATIONS	86
E114 RECORD NDI DATA ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	85
I197 SET UP RADIOGRAPHIC EXPOSURE EQUIPMENT	85
I181 INTERPRET RADIOGRAPHIC INDICATIONS	80
E119 RECORD WEAR METAL CONCENTRATIONS ON DD FORMS 2027 (OIL ANALYSIS RECORD)	76
J206 IDENTIFY ULTRASONIC FLAW INDICATIONS	73
N285 OPERATE ATOMIC EMISSION SPECTROMETERS	71
N290 PERFORM JOAP TREND ANALYSIS	71
F128 IDENTIFY MATERIAL TYPE OR COMPOSITION BY REFERENCE TO TECHNICAL DATA	71
M278 PERFORM PREOPERATIONAL INSPECTIONS OF ULTRASONIC EQUIPMENT	68
J210 INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	68
N281 DETERMINE SOURCES OF WEAR METAL OR CONTAMINATION	63
O314 TEST ULTRAVIOLET LIGHT INTENSITY	51
G150 PERFORM COIN-TAP TEST	39
G147 INTERPRET BOND TESTING INDICATIONS	37
G146 IDENTIFY BOND TESTING INDICATIONS	36

* Average number of tasks performed - 128

TABLE 10
VEHICLES OPERATED BY FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

<u>VEHICLES OPERATED</u>	<u>PERCENT MEMBERS RESPONDING (N=294)</u>
PICKUP TRUCK	42
NF-2 LITE CART	27
METRO	12
CARGO TRUCK (1 to 1 1/2 TON)	10
1H1 DIESEL HEATER	5
SEDAN/STATION WAGON	4
FORKLIFT	1
TUG	1
WAREHOUSE TRACTOR	*

* Denotes less than .5 percent

TABLE 11

X-RAY AND PENETRANT EQUIPMENT USED
BY FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

<u>EQUIPMENT USED</u>	<u>PERCENT MEMBERS RESPONDING (N=294)</u>
<u>X-RAY</u>	
DOSIMETERS	95
FILM VIEWERS	93
X-RAY WARNING LIGHTS	93
MAGNAFLUX KV150 UNITS	79
DENSITOMETERS	67
SM 400 SURVEYMETER (NUCLEAR RESEARCH CORP)	65
VICTOREEN 440	58
KODAK AUTOMATIC PROCESSING UNITS	47
MANUAL FILM PROCESSORS	42
SPERRY KV160 UNITS	35
SPERRY KV300 UNITS	35
KODAK P1 PAPER PROCESSORS	26
LITTON AUTOMATIC PROCESSING UNITS	21
RIDGE CORP TUBESTANDS	16
SPERRY KV275 UNITS	15
ANDREX KV150 UNITS	14
VICTOREEN 592B	14
HEAT PIPE VR10	12
ANDREX KV300 UNITS	3
PAKO AUTOMATIC PROCESSING UNITS	3
<u>PENETRANT</u>	
MA2 PENETRANT LINES	71
LIPOPHILIC MATERIALS	62
ML49 BLACK LIGHTS	40
ZB26 BLACK LIGHTS	34
HYDROPHILIC MATERIALS	32
SPECTROLINE B-100XR BLACK LIGHTS	30
ZB22A BLACK LIGHTS	17
MA1 PENETRANT LINES	12
MA3 PENETRANT LINES	7

TABLE 12

ULTRASOUND AND MAGNETIC PARTICLE EQUIPMENT
USED BY FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

<u>EQUIPMENT USED</u>	<u>PERCENT MEMBERS RESPONDING (N=294)</u>
<u>ULTRASOUND</u>	
SONICS MARK 4	75
DELCON 118 LEAK DETECTOR	52
SONICS MARK 1	52
NDT 131	45
ROTOSCAN	19
LEAK DETECTOR 235	11
UJ REFLECTORSCOPES	11
SPERRY UM715	10
453 OSCILLOSCOPES	7
ULS-48 KRAUTKRAMER BRANSON	6
BRANSON 301	3
BRANSON 303B	3
SPERRY 775	3
SPERRY 775B	2
BRANSON 303	1
<u>MAGNETIC PARTICLE</u>	
DA200 PARKER PROBES	95
MAGNAFLUX STATIONARY UNITS	69
MAGNAFLUX KH07	46
URESCO STATIONARY UNITS	21
BARDALL STATIONARY MAG UNIT	3
MAGNAFLUX M-90	3
MAGNAFLUX KCH3D	2

TABLE 13

EDDY CURRENT AND OPTICAL EQUIPMENT USED
BY FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

<u>EQUIPMENT USED</u>	<u>PERCENT MEMBERS RESPONDING (N=294)</u>
<u>EDDY CURRENT</u>	
MAGNAFLUX ED520	88
GULTON FD100	40
FM 120	29
GRANDIA 92836	28
NDT 5	22
NDT 127	20
EM 3300	19
MAGNAFLUX HT-100	14
NDT 3	10
ED 530	4
DR FORSTER-DEFECTOMETERS 2.164	3
EM 2100	3
H2.835 FORSTER-DEFECTOMETERS	2
<u>OPTICAL</u>	
STEREO-ZOOM MICROSCOPES	90
BOROSCOPES	64
FISHER OPTICS SCOPES	3

TABLE 14

OIL ANALYSIS AND BOND TESTING EQUIPMENT USED
BY FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

<u>EQUIPMENT USED</u>	<u>PERCENT MEMBERS RESPONDING (N=294)</u>
<u>OIL ANALYSIS</u>	
BAIRD ATOMIC AE35U-3	68
PERKIN-ELMER 2380	23
BAIRD ATOMIC AE35U-1	9
PERKIN-ELMER 303	8
PERKIN-ELMER 305	8
PORTABLE WEAR METAL ANALYZERS	3
<u>BOND TESTING</u>	
MARK 2B HARMONIC BOND TESTERS	39
S2B SONDICATORS	23
210 BOND TESTERS	20
<u>SPECIAL EQUIPMENT</u>	
COMPLETE OIL BREAKDOWN RATER ANALYZER (COBRA) UNIT	9
ACOUSTIC EMISSION UNITS	3

TABLE 15

STS ELEMENTS REQUIRING REVIEW OF 3-SKILL LEVEL PROFICIENCY CODES

STS ELEMENT (WITH SELECTED SAMPLE TASKS)	PROF CODE	PERCENT MBRS PERFORMING		TE RATING*	TD RATING**
		TST JOB (N=144)	TST ENL (N=294)		
6d PROCESSING AND CONTROLLING MATERIAL	A				
E115 RECORD NDI DATA ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)		67	65	4.62	4.46
B33 INVENTORY EQUIPMENT TOOLS OR SUPPLIES		44	53	3.50	3.86
17a SELECT INSPECTION METHOD	-				
F140 SELECT GENERAL INSPECTION METHOD TO BE USED WHEN TECHNICAL DATA IS NOT AVAILABLE		75	82	6.02	5.68
H173 SELECT PENETRANT METHODS		80	85	5.81	4.38
17b DEVELOP INSPECTION TECHNIQUES	A				
H158 DEVELOP PENETRANT INSPECTION TECHNIQUES		45	49	5.61	4.95
K231 DEVELOP MAGNETIC PARTICLE INSPECTION TECHNIQUES		59	61	5.47	5.71

* Mean TE rating is 4.01 and Standard Deviation is 2.08 (High TE=6.09)

** Average TD rating is 5.00

subject-knowledge level proficiency requirement. However, the percentage of first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) members responding to tasks keyed to that element would support performance-type tasks and performance level proficiency codes for those tasks. Similar circumstances exist for paragraphs 17b. Also requiring review is paragraph 17a. This paragraph reflects a dash (-) proficiency code for 3-skill level personnel; yet the percentage of first-job or first-enlistment members responding to tasks matched to the element is sufficiently high to suggest that task performance and task knowledge level proficiency coding may be more appropriate.

Tasks not matched to any element of the STS are listed at the end of the STS computer listing. (Examples of technical tasks performed by 20 percent or more respondents of the STS target groups, but which were not referenced to any STS element, are displayed in Table 16.) These tasks were reviewed to determine if there were any tasks concentrated around any particular functions or jobs. The only trend noted involved the tasks toward the bottom of Table 16 which appear to be related to supply activities. It may be worthwhile for training specialists and subject-matter specialists to review these tasks and tasks keyed to other supply-related areas of the STS (i.e., paragraph 5a (1)), with a view toward establishing a separate line item (paragraph) in the STS covering all supply activities.

Plan of Instruction (POI)

Based on the previously mentioned assistance from the technical school subject-matter experts in matching inventory tasks to the 3ABR42732 002 POI, dated 30 May 1986, a computer product was generated displaying the results of the matching process. Information furnished for consideration includes percent members performing data for first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) personnel, as well as training emphasis (TE) and task difficulty (TD) ratings.

Review of tasks matched to the POI reveals that all POI blocks and units of instruction are well supported by survey data (based on percentages of first-term personnel performing tasks or high TE or TD ratings for pertinent tasks) or are justified because tasks are safety-related and cannot be omitted.

There were some apparently significant tasks with relatively high (above the mean) training emphasis, sufficiently high task difficulty ratings, and 30 percent or more first-job or first-enlistment personnel performing which were not matched to any POI blocks of instruction. This combination of factors indicates formal training may be required and resident technical training could be supported. Table 17 lists a sampling of such tasks. Subject-matter experts and training personnel should perform an in-depth review of this series of tasks to determine the necessity for training and the most effective method to accomplish it.

TABLE 16

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE
GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS	PERCENT MEMBERS PERFORMING				TE RATING*	TD RATING**
	1ST JOB (N=144)	1ST ENL (N=294)	DAFSC 42752 (N=418)	DAFSC 42772 (N=184)		
L256	84	88	89	74	6.37	4.98
F142	93	94	90	78	5.91	3.77
0315	19	29	37	42	5.09	4.97
E106	56	60	62	47	4.86	3.71
0302	23	28	37	49	4.75	5.38
N294	68	72	73	53	4.69	3.98
F132	61	61	57	48	4.34	3.84
F139	18	21	24	26	3.05	4.15
F137	14	14	17	23	3.02	4.34
E89	8	14	30	61	2.69	4.29
I192	24	25	28	38	2.67	3.59
E91	2	8	23	63	2.48	4.30
E90	4	9	25	64	2.42	4.32
E97	4	6	13	39	1.61	4.10

* Mean TE rating is 4.01 and Standard Deviation is 2.08 (High TE= 6.09)

** Average TD rating is 5.00

TABLE 17

SAMPLING OF TASKS NOT REFERENCED TO 3ABR42732 002 POI BLOCKS
(30 PERCENT OR MORE RESPONDING)

EXAMPLES OF TASKS NOT REFERENCED	PERCENT MEMBERS PERFORMING		TNG EMP*	TASK DIFF**
	1ST JOB (N=144)	1ST ENL (N=294)		
0314 TEST ULTRAVIOLET LIGHT INTENSITY	42	51	5.48	4.37
E116 RECORD NDI DATA ON AFTO FORMS 781 (AERO- SPACE VEHICLE FLIGHT DATA DOCUMENT)	47	51	5.27	4.40
N287 PERFORM ACCURACY CALCULATIONS ON ATOMIC EMISSION SPECTROMETERS	51	51	5.23	6.75
F125 DETERMINE IF NONCONDUCTIVE COATING THICKNESS WILL AFFECT INSPECTIONS	75	76	5.22	4.31
N292 PERFORM REPEATABILITY CALCULATIONS ON ATOMIC EMISSION SPECTROMETERS	41	46	4.95	6.67
E113 RECORD NDI DATA ON AFTO FORMS 244 (INDUSTRIAL/SUPPORT EQUIPMENT RECORD)	47	49	4.86	4.77
E115 RECORD NDI DATA ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	67	65	4.62	4.46
E123 VERIFY JOAP DATA ON KEYPUNCH CARDS	49	51	4.36	4.55
F132 MEASURE THICKNESS OF MATERIAL OR LENGTH OF INDICATIONS BY HAND MEASURING DEVICES, SUCH AS MICROMETERS OR RULERS	61	61	4.34	3.84

* Mean TE rating is 4.01 and Standard Deviation is 2.08 (High TE=6.09)

** Average TD rating is 5.00

Overall, the current training program appears to be highly effective, with first-term personnel rendering very high positive ratings on utilization of training (see Table 19, ANALYSIS OF JOB SATISFACTION DATA section).

JOB SATISFACTION ANALYSIS

An examination of the job satisfaction indicators of various groups can give career ladder managers a better understanding of some of the factors which may affect the job performance of airmen in the career ladder. Attitude questions covering job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions were included in the survey booklet to provide indications of job satisfaction. Table 18 presents job satisfaction data for the specialty jobs discussed in the SPECIALTY JOBS section of this report. An examination of these data can show how overall job satisfaction may be influenced by the type of job performed. Another view of job satisfaction data is reflected in Table 19, where data for AFSC 427X2 TAFMS groups are displayed, together with data for a comparative sample of Mission Equipment Maintenance career ladders surveyed in 1985. These data can give a relative measure of how the job satisfaction of AFSC 427X2 personnel compares with that of other similar AF specialties. Finally, an indication of how job satisfaction perceptions within the career ladder have changed over time is provided in Table 20, where TAFMS group data for 1986 survey respondents is presented, along with data from respondents to the last occupational survey of the career ladder, published in 1979.

In general, as reflected in Tables 18 through 20, the percentages of various group members responding positively to the job satisfaction indicators were quite high. For example, a review of job satisfaction data in Table 18 for the specialty jobs identified in the analysis reveals that at least 50 percent of the personnel in each specialty job responded positively to all of the indicators listed. Additionally, review of the job inventory write-in comments from survey sample personnel further supports the high job satisfaction indications for the career ladder as displayed in Table 18. When there are serious problems in a career ladder, survey respondents are usually quite free with write-in comments to complain about perceived problems in the field. Twenty-one percent of the survey sample used the write-in feature to convey some type of information, yet only 3 percent of the comments (representing less than 1 percent of the survey sample) could be characterized as complaints. No particular trends were noted among the few comments received. Further, as reflected in Table 19, the positive responses for AFSC 427X2 personnel are generally higher than those of the comparative sample, the exceptions being limited to slightly lower reenlistment intentions for the three comparison groups. Examination of job satisfaction indicators for 1986 and 1979 TAFMS groups (see Table 20) reflects that all favorable response percentages are higher for the current 1-48 month group. Figures for the current study second enlistment (49 to 96 months) and career (97+ months) groups, while slightly lower in some cases, are still quite high. These high percentages of positive responses in these comparisons reflect a career ladder where personnel appear to be very happy in their jobs.

TABLE 18

COMPARISONS OF JOB SATISFACTION INDICATORS BY SPECIALTY JOB GROUPS
(PERCENT MEMBERS RESPONDING)*

	GENERAL INSPECTION PERSONNEL (N=471)	SUPERVISORY NDI TECHNICIANS (N=92)	APPRENTICE INSPECTION PERSONNEL (N=29)	JOAP PERSONNEL (N=18)	TRAINING PERSONNEL (N=17)	SHOP/LAB NCOICs (N=23)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	89	90	76	78	88	78
SO-SO	7	4	17	11	6	9
DULL	3	4	7	11	6	13
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	88 12	91 9	83 17	61 33	77 23	83 17
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	92 8	89 10	93 7	72 28	94 6	83 17
<u>SENSE OF ACCOMPLISHMENT FROM JOB:</u>						
SATISFIED	80	84	76	72	71	61
NEUTRAL	9	4	7	22	6	22
DISSATISFIED	11	12	17	6	23	17
<u>REENLISTMENT INTENTIONS:</u>						
YES, OR PROBABLY YES	62	69	52	56	59	52
NO, PROBABLY NO	35	15	45	44	35	13
PLAN TO RETIRE	3	16	3	0	0	35

* Columns may not add to 100 percent due to nonresponse or rounding

TABLE 19

COMPARISON OF JOB SATISFACTION INDICATORS BY TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)*

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	427X2 (N=294)	COMPARATIVE SAMPLE** (N=2,321)	427X2 (N=160)	COMPARATIVE SAMPLE** (N=1,118)	427X2 (N=236)	COMPARATIVE SAMPLE** (N=1,593)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	89	61	84	68	89	74
SO-SO	7	22	9	19	5	14
DULL	2	18	6	12	6	11
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
FAIRLY WELL TO PERFECTLY	88	72	82	78	86	81
LITTLE OR NOT AT ALL	12	28	18	22	14	19
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
FAIRLY WELL TO PERFECTLY	92	83	86	82	88	80
LITTLE OR NOT AT ALL	8	16	14	18	12	20
<u>REENLISTMENT INTENTIONS:</u>						
YES, OR PROBABLY YES	54	57	61	73	70	74
NO, OR PROBABLY NO	45	40	37	25	12	10
PLAN TO RETIRE	***	***	***	***	17	15

* Columns may not add to 100 percent due to nonresponse or rounding

** Comparative sample of Mission Equipment Maintenance career ladders surveyed in 1985
(Includes AFSCs 303X2, 411X1, 423X3, 427X4, and 463X0)

*** Less than 1 percent

TABLE 20
COMPARISON OF CURRENT SURVEY AND 1979 TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)

	<u>1-48 MONTHS</u>		<u>49-96 MONTHS</u>		<u>97+ MONTHS</u>	
	<u>1986</u> <u>(N=294)</u>	<u>1979</u> <u>(N=264)</u>	<u>1986</u> <u>(N=160)</u>	<u>1979</u> <u>(N=101)</u>	<u>1986</u> <u>(N=236)</u>	<u>1979</u> <u>(N=295)</u>
<u>JOB SATISFACTION INFORMATION:</u>						
JOB FAIRLY INTERESTING OR BETTER	89	80	84	86	89	86
TALENTS UTILIZED FAIRLY WELL OR BETTER	88	82	82	86	86	89
TRAINING UTILIZED FAIRLY WELL OR BETTER	92	90	86	87	88	89
FAVORABLY CONSIDERING REENLISTMENT	54	43	61	45	70	67

MAJCOM COMPARISONS

Tasks performed pertaining to the various NDI techniques and procedures and background data for personnel of the major commands (MAJCOM) with larger AFSC 427X2 populations were compared to determine whether job content varied as a function of MAJCOM assignment.

While the overall jobs performed across the commands were very similar, some variation in the percentages of members performing tasks pertaining to two of the NDI inspection processes was notable. MAC and SAC personnel responded in lesser numbers to tasks related to bond testing functions. Additionally, MAC members spent noticeably less time (only 2 percent of their relative duty time versus a range up to 10 percent for other using commands) on tasks pertaining to Joint Oil Analysis Program (JOAP) functions. By and large, however, the jobs performed across the various commands were much the same, with all NDI processes about equally utilized.

IMPLICATIONS

This survey was requested by training personnel to obtain current task and equipment data to assist in evaluating training programs. Overall, analysis indicated that both the Specialty Training Standard (STS) and Plan of Instruction (POI) were well supported by survey data.

Specifically, review of the STS indicated only a few adjustments in 3-skill level proficiency coding may be required. Additionally, a series of tasks not matched to any element of the STS should also be reviewed for possible inclusion in the next update of the STS. This could involve the addition of a separate line entry for supply activities. The evaluation of the POI for the ABR course for the career ladder revealed that the current course structure is on target. The only adjustment which may be required involves a series of tasks not matched to the POI but which have relatively high percentages of first-term personnel performing. These tasks should be evaluated for possible inclusion in the current course.

APPENDIX A

SELECTED REPRESENTATIVE TASKS PERFORMED BY
CAREER LADDER STRUCTURE GROUPS

TABLE I

GROUP ID NUMBER AND TITLE: GRP052 - GENERAL INSPECTION PERSONNEL
 GROUP SIZE: 471 PERCENT OF SAMPLE: 68%
 AVERAGE GRADE: E-4 AVERAGE TICF: 50 MONTHS
 AVERAGE TAFMS: 60 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
H155 APPLY PENETRANT TO MATERIALS	99
H163 IDENTIFY PENETRANT INDICATIONS	99
K234 INTERPRET MAGNETIC PARTICLE INDICATIONS	98
K233 IDENTIFY MAGNETIC PARTICLE INDICATIONS	98
L250 IDENTIFY EDDY CURRENT INDICATIONS	98
H166 INTERPRET PENETRANT INDICATIONS	98
F136 PERFORM POSTCLEANING OF MATERIAL AFTER INSPECTIONS	95
K245 SELECT TYPE OF MAGNETISM TO USE FOR INSPECTIONS	95
L251 INTERPRET EDDY CURRENT INDICATIONS ON A METER	95
I183 OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	94
I180 IDENTIFY RADIOGRAPHIC INDICATIONS	93
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	93
I197 SET UP RADIOGRAPHIC EXPOSURE EQUIPMENT	91
I181 INTERPRET RADIOGRAPHIC INDICATIONS	90
F134 OPERATE OR USE OPTICAL AIDS	90
E114 RECORD NDI DATA ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	88
I196 SELECT RADIOGRAPHIC EXPOSURE TECHNIQUE IN ACCORDANCE WITH TECHNICAL DATA	86
I193 SELECT FILM TYPE FOR RADIOGRAPHIC INSPECTIONS	83
M278 PERFORM PREOPERATIONAL INSPECTIONS OF ULTRASONIC EQUIPMENT	80
J206 IDENTIFY ULTRASONIC FLAW DETECTION INDICATIONS	79
I185 PERFORM AUTOMATIC RADIOGRAPHIC FILM PROCESSING	78
E119 RECORD WEAR METAL CONCENTRATIONS ON DD FORMS 2027 (OIL ANALYSIS RECORD)	77
J210 INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	77
F127 DETERMINE TEST STANDARDS TO BE USED FOR INSPECTIONS	76
N290 PERFORM JOAP TREND ANALYSIS	74
N285 OPERATE ATOMIC EMISSION SPECTROMETERS	73
K231 DEVELOP MAGNETIC PARTICLE INSPECTION TECHNIQUES	66
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	64
E107 RECORD JOAP DATA ON AF FORMS 1530 (PUNCH CARD TRANSCRIPT)	61
I184 PARTICIPATE IN SILVER RECOVERY PROGRAM	59
G147 INTERPRET BOND TESTING INDICATIONS	45

TABLE II

GROUP ID NUMBER AND TITLE: GRP051 - SUPERVISORY NDI TECHNICIANS
 GROUP SIZE: 92 PERCENT OF SAMPLE: 13%
 AVERAGE GRADE: E-6 AVERAGE TICF: 116 MONTHS
 AVERAGE TAFMS: 153 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	98
H163 IDENTIFY PENETRANT INDICATIONS	98
B22 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	97
K234 INTERPRET MAGNETIC PARTICLE INDICATIONS	97
L251 INTERPRET EDDY CURRENT INDICATIONS ON A METER	97
H166 INTERPRET PENETRANT INDICATIONS	96
H155 APPLY PENETRANT TO MATERIALS	96
F134 OPERATE OR USE OPTICAL AIDS	95
L254 OPERATE EDDY CURRENT EQUIPMENT FOR FLAW DETECTION	95
A9 PLAN OR SCHEDULE WORK ASSIGNMENTS	93
F136 PERFORM POSTCLEANING OF MATERIAL AFTER INSPECTIONS	93
I183 OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	93
E90 MAINTAIN D-04 DAILY DOCUMENT REGISTERS	92
I181 INTERPRET RADIOGRAPHIC INDICATIONS	92
I180 IDENTIFY RADIOGRAPHIC INDICATIONS	92
B38 SUPERVISE NONDESTRUCTIVE INSPECTION SPECIALISTS (AFSC 42752)	91
E89 MAINTAIN AF FORMS 2413 (SUPPLY CONTROL LOG)	91
D66 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	90
F127 DETERMINE TEST STANDARDS TO BE USED FOR INSPECTIONS	90
I190 PREPARE FILM PROCESSING EQUIPMENT PRIOR TO USE	89
C56 WRITE AIRMAN PERFORMANCE REPORTS (APR)	88
H159 DISPOSE OF USED/DEPLETED LIQUID PENETRANT MATERIALS	88
B27 DRAFT CORRESPONDENCE	87
A3 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	87
I189 PREPARE FILM FOR EXPOSURE	86
N290 PERFORM JOAP TREND ANALYSIS	85
K231 DEVELOP MAGNETIC PARTICLE INSPECTION TECHNIQUES	85
J215 OPERATE ULTRASONIC FLAW DETECTION EQUIPMENT	83
D62 CONDUCT OJT	78
A6 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	77
B35 SUPERVISE APPRENTICE NONDESTRUCTIVE INSPECTION (NDI) SPECIALISTS (AFSC 42732)	76
E87 INPUT OIL ANALYSIS DATA INTO SYSTEM	74
N298 SHARPEN AND POLISH ROD ELECTRODES	74
N285 OPERATE ATOMIC EMISSION SPECTROMETERS	67

TABLE III

GROUP ID NUMBER AND TITLE: GRP046 - APPRENTICE INSPECTION PERSONNEL
 GROUP SIZE: 29 PERCENT OF SAMPLE: 4%
 AVERAGE GRADE: E-3, E-4 AVERAGE TICF: 35 MONTHS
 AVERAGE TAFMS: 44 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
H155 APPLY PENETRANT TO MATERIALS	100
K235 OPERATE MAGNETIC PARTICLE EQUIPMENT	100
K229 CHECK FOR DEMAGNETIZATION	100
H163 IDENTIFY PENETRANT INDICATIONS	97
K233 IDENTIFY MAGNETIC PARTICLE INDICATIONS	97
F124 DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	97
H166 INTERPRET PENETRANT INDICATIONS	93
H169 REMOVE PENETRANT FROM MATERIALS	93
K234 INTERPRET MAGNETIC PARTICLE INDICATIONS	93
L251 INTERPRET EDDY CURRENT INDICATIONS ON A METER	90
H153 APPLY EMULSIFIERS TO MATERIALS	86
F142 VERIFY CLEANLINESS OF MATERIAL FOR INSPECTIONS	86
E114 RECORD NDI DATA ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	83
I189 PREPARE FILM FOR EXPOSURE	83
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	76
F141 SELECT SPECIFIC INSPECTION METHOD TO BE USED BY REFERENCE TO TECHNICAL DATA	76
F134 OPERATE OR USE OPTICAL AIDS	76
J206 IDENTIFY ULTRASONIC FLAW DETECTION INDICATIONS	72
I185 PERFORM AUTOMATIC RADIOGRAPHIC FILM PROCESSING	69
J210 INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	66
I183 OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	62
I180 IDENTIFY RADIOGRAPHIC INDICATIONS	62
H173 SELECT PENETRANT METHODS	59
F125 DETERMINE IF NONCONDUCTIVE COATING THICKNESS WILL AFFECT INSPECTIONS	59
F127 DETERMINE TEST STANDARDS TO BE USED FOR INSPECTIONS	55
F140 SELECT GENERAL INSPECTION METHOD TO BE USED WHEN TECHNICAL DATA IS NOT AVAILABLE	55
I181 INTERPRET RADIOGRAPHIC INDICATIONS	52
F128 IDENTIFY MATERIAL TYPE OR COMPOSITION BY REFERENCE TO TECHNICAL DATA	52

TABLE IV

GROUP ID NUMBER AND TITLE: GRP037 - JOAP PERSONNEL
 GROUP SIZE: 18 PERCENT OF SAMPLE: 3%
 AVERAGE GRADE: E-3 AVERAGE TICF: 25 MONTHS
 AVERAGE TAFMS: 28 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
H155 APPLY PENETRANT TO MATERIALS	100
H169 REMOVE PENETRANT FROM MATERIALS	100
E119 RECORD WEAR METAL CONCENTRATIONS ON DD FORMS 2027 (OIL ANALYSIS RECORD)	94
E118 RECORD WEAR METAL CONCENTRATIONS ON DD FORMS 2026 (OIL ANALYSIS REQUEST)	94
N298 SHARPEN AND POLISH ROD ELECTRODES	89
N290 PERFORM JOAP TREND ANALYSIS	89
H166 INTERPRET PENETRANT INDICATIONS	89
N285 OPERATE ATOMIC EMISSION SPECTROMETERS	83
N279 ANALYZE CORRELATION SAMPLES	83
K233 IDENTIFY MAGNETIC PARTICLE INDICATIONS	83
F134 OPERATE OR USE OPTICAL AIDS	83
E114 RECORD NDI DATA ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	78
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	78
K234 INTERPRET MAGNETIC PARTICLE INDICATIONS	78
K235 OPERATE MAGNETIC PARTICLE EQUIPMENT	72
N288 PERFORM COMPLETE CALIBRATION VERIFICATION CHECKS ON ATOMIC EMISSION SPECTROMETERS	72
N295 PREPARE OIL ANALYSIS RESULTS FOR KEYPUNCH	67
E106 PREPARE TRANSIT JOAP RECORDS	67
N281 DETERMINE SOURCES OF WEAR METALS OR CONTAMINATION	67
E123 VERIFY JOAP DATA ON KEYPUNCH CARDS	61
F141 SELECT SPECIFIC INSPECTION METHOD TO BE USED BY REFERENCE TO TECHNICAL DATA	61
L250 IDENTIFY EDDY CURRENT INDICATIONS	61
M274 PERFORM PREOPERATIONAL INSPECTIONS OF JOAP EQUIPMENT	56
H173 SELECT PENETRANT METHODS	56
I181 INTERPRET RADIOGRAPHIC INDICATIONS	56
I180 IDENTIFY RADIOGRAPHIC INDICATIONS	56
L251 INTERPRET EDDY CURRENT INDICATIONS ON A METER	56
N300 STANDARDIZE ATOMIC EMISSION SPECTROMETERS	50
I185 PERFORM AUTOMATIC RADIOGRAPHIC FILM PROCESSING	50
I183 OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	50

TABLE V

GROUP ID NUMBER AND TITLE: SPC050 - TRAINING PERSONNEL
 GROUP SIZE: 17 PERCENT OF SAMPLE: 2%
 AVERAGE GRADE: E-5 AVERAGE TICF: 70 MONTHS
 AVERAGE TAFMS: 78 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
D63 CONDUCT RESIDENT COURSE CLASSROOM TRAINING	82
B59 ADMINISTER OR SCORE TESTS	76
D82 WRITE TEST QUESTIONS	76
B21 COUNSEL PERSONNEL ON PERSONAL PROBLEMS	76
D66 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	71
D76 EVALUATE PROGRESS OF RESIDENT COURSE STUDENTS	65
D65 COUNSEL TRAINEES ON TRAINING PROGRESS	65
D70 DEVELOP PRACTICAL TESTS	65
B20 COUNSEL PERSONNEL ON MILITARY-RELATED PROBLEMS	65
F131 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	59
B22 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	59
D71 DEVELOP RESIDENT COURSE CURRICULUM MATERIALS	53
D79 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	47
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	47
F136 PERFORM POSTCLEANING OF MATERIAL AFTER INSPECTIONS	47
G151 SET UP BOND TESTING EQUIPMENT	41
G149 OPERATE BOND TESTING EQUIPMENT ON METALLIC STRUCTURES	41
G150 PERFORM COIN-TAP TEST	41
G147 INTERPRET BOND TESTING INDICATIONS	41
M271 PERFORM PREOPERATIONAL INSPECTIONS OF BOND TESTING EQUIPMENT	41
J222 SET UP ULTRASONIC FLAW DETECTION EQUIPMENT	41
J210 INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	41
J198 APPLY COUPLANTS	41
F130 IDENTIFY SURFACE CONDITION OF MATERIAL, SUCH AS SMOOTHNESS OR ROUGHNESS	41
J220 REMOVE COUPLANTS	41
H276 PERFORM PREOPERATIONAL INSPECTIONS OF PENETRANT EQUIPMENT	41
M275 PERFORM PREOPERATIONAL INSPECTIONS OF MAGNETIC PARTICLE EQUIPMENT	41
M261 PERFORM PERIODIC OPERATIONAL INSPECTIONS OR OPERATOR MAINTENANCE OF MAGNETIC PARTICLE EQUIPMENT	41

TABLE VI

GROUP ID NUMBER AND TITLE: GRP035 - SHOP/LAB NCOICs
 GROUP SIZE: 23 PERCENT OF SAMPLE: 3%
 AVERAGE GRADE: E-6, E-7 AVERAGE TICF: 142 MONTHS
 AVERAGE TAFMS: 189 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
B38 SUPERVISE NONDESTRUCTIVE INSPECTION SPECIALISTS (AFSC 42752)	100
C43 EVALUATE COMPLIANCE WITH WORK STANDARDS	100
C56 WRITE AIRMAN PERFORMANCE REPORTS (APR)	100
A15 SCHEDULE LEAVES OR PASSES	100
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	100
B22 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	96
D79 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	91
A3 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	91
B39 SUPERVISE NONDESTRUCTIVE INSPECTION TECHNICIANS (AFSC 42772)	87
D72 DIRECT OR IMPLEMENT OJT PROGRAMS	87
D66 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	87
A5 ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OI), OR STANDING OPERATING PROCEDURES (SOP)	87
A6 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	83
B29 IMPLEMENT SAFETY PROGRAMS OR PROCEDURES	83
E91 MAINTAIN D-18 PRIORITY MONITOR REPORTS FILES	83
A13 PREPARE JOB DESCRIPTIONS	83
D65 COUNSEL TRAINEES ON TRAINING PROGRESS	78
C51 EVALUATE SUGGESTIONS	74
D81 SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	74
B17 COMPLETE PERSONNEL ACTION REQUESTS	74
E92 MAINTAIN DD FORMS 1348-1 (DOD SINGLE LINE ITEM RELEASE, RECEIPT DOCUMENT)	70
A4 DRAFT BUDGET OR FINANCIAL REQUIREMENTS	70
B35 SUPERVISE APPRENTICE NONDESTRUCTIVE INSPECTION (NDI) SPECIALISTS (AFSC 42732)	65
D62 CONDUCT OJT	65
E104 PREPARE AF FORMS 601 (EQUIPMENT ACTION REQUEST)	57
C42 EVALUATE BUDGETING OR FINANCIAL REQUIREMENTS	57
E84 CONDUCT COST COMPARISONS WHEN ORDERING OR UPGRADING MATERIALS	57
B18 CONDUCT STAFF MEETINGS	57
I184 PARTICIPATE IN SILVER RECOVERY PROGRAM	52

END

3-87

DTIC